US Fish and Wildlife Service | Determining Objectives _part 1_

[MUSIC PLAYING]

Welcome back. We're on to Module C now, Determining Objectives. I said in the last module that problem framing is the most important step of structured decision making. Now I also want to tell you that determining objectives is the most important step of structured decision making. And I'll probably say it again on some of these other steps, as well.

But to some extent, determining objectives really is a critical issue in the spirit of values-focused thinking. We talked about this earlier. Sarah mentioned it in the first lecture. I mentioned it in the problem framing thing.

The notion of value-focused thinking comes out of a book by Ralph Keeney from the 1970s, and really laid out this idea of putting objectives, putting values, first in a decision. Because a decision is an expression of values. And if that's the case, then talking about objectives, talking about values, early on, and making sure that the values really help set the stage for the whole decision analysis, that's critical.

And so, this is an important module. We're going to talk about a lot of things here. And I'm sure you've gone through many kinds of planning processes where you've laid out goals, and objectives, and strategies, and all that kind of stuff. And you may think, oh, this is just about getting in a room, and sitting down, and writing some things down.

Well, in the field of decision analysis, there's a lot of tools, actually, that have been developed that are valuable in helping us write down our objectives, classify our objectives, figure out how to measure our objectives. And so, we're going to talk about a lot of those things, and try to give you as many tools to put your toolkit is you can to help you with this really critical part.

And I should note right at the outset that one of the indications about how important this is is how many co-authors we've got on this particular module. This module was developed initially by Jean Cochrane, and Angela Matz, and Jennifer Szymanski. And then later, additional work was done by Jim Lyons, and by Sarah Converse, and by myself.

So a lot of folks from USGS and Fish And Wildlife Service, in many of the regions of Fish And Wildlife Service, have thought about how can we really capture what's important here. Because as consultants,

as facilitators, this is a critical aspect. And I think you'll find, too, that when you can get clear-headed about objectives, that really helps an awful lot. In fact, sometimes that's the impediment to a decision. And we've certainly all had the experience that there are cases where just getting clear about the objectives have allowed the decision maker to proceed with the decision, because that was the impediment to their decision.

So in this module, we're going to talk about a number of things. We're going to talk about identifying concerns and translating them into objectives. We're going to distinguish fundamental, means, process, and strategic objectives. We're going to talk about building hierarchies of fundamental objectives. And we're going to talk about developing measurable attributes for your objectives. So there's a whole bunch of skills that we're going to be talking about in this module.

Objectives are what we really care about, and well-defined objectives are critical in order to create alternatives, to compare alternatives, to choose the pertinent information to use in evaluating alternatives, to explain your decisions to others. All of the structured decision steps build from objectives. And so, we really want to do a good job and find some techniques that allow us to really allow people to operate at their best, and really understand the objectives that are operating in a particular management decision.

We've written down this recipe for good objectives, for developing good objectives, and these are also the steps that we're going to go through in this module. The first step is to articulate concerns and wishes. The second step is to convert concerns and wishes into objectives.

The third step is to structure your objectives, and there's three components in that. One is to classify objectives, and we'll talk about different classes of objectives. 3B, the second piece here, is to distinguish fundamental and means objectives. 3C, create objectives hierarchy. So a bunch of tools that are useful for structuring objectives.

Step four is to create measurable attributes for each objective. This is an extraordinarily challenging step, and really important if you want to use the subsequent analytical tools that decision analysis offers.

And the fifth step is repeat as needed, and what that means is, again, view this as an iterative prototyping sort of exercise where you can go back and revisit the objectives and the measurable

attributes that you've created.

So let's begin with step one, articulating concerns and objectives. And I guess what I'd say here is this is the brainstorming stage of analyzing objectives. When I'm consulting with a decision maker, and particularly if that decision maker has said, well, look, let's bring a group of people together that understand this, so we have a group that's thinking through this together, and that'll help generate more perspectives.

There's a stage early on that I like to use, which is really a brainstorming stage. What we're trying to do is just get everything out on the table first without any critique, without any revision, without any analysis, evaluation. That what we're doing is allowing everybody to talk about what might be the concerns, what might be the objectives on the table.

And I think that unfettered sort of brainstorming stage is good. That gives you a lot of raw material to work with. And then the subsequent steps I'm going to talk about can be used to winnow that down, to really focus on the key aspects.

So at the brainstorming stage, how do you identify what's important? What are the objectives at hand? Well, a lot of different questions you can ask. And the way I approach this is to ask the questions in a lot of different ways. Why is this decision a problem? Why are you here? Why are you worried about this? What are you fussing about?

That question sometimes gets people thinking about things, because they'll say, well, I'm here because the cooperative farming program we've got, the farmers are really upset about the way they're managing our grasslands, et cetera. Well, there's a lot in that, right? What I just rambled off, which is an issue that affects a lot of the National Wildlife Refuges in the Eastern United States, as well as others. I'm familiar with the Eastern US.

There's a lot of objectives in there. There's objectives that have to do was grassland management, presumably for some conservation concerns. Maybe there's some rare plants or some rare grassland birds. But there's also a cooperative farming program. We're concerned about the farmers and their role. And then, there's public issues of perception around this.

Already, we've gotten a lot out on the table. So asking people why they're here and why is this a problem.

Another question to ask is why is it hard to make this decision? I think this is actually an interesting question to ask for a lot of different reasons. Why is it hard to make this decision?

One of the reasons a decision can be hard-- Sarah talked about this in the first module-- but one of the reasons a decision to be hard is because there's just a whole lot of objectives. And when you ask people, why are you impeded from making this decision? The decision maker might come back to you and say, well, because there's a lot of people calling me, and I've got a lot of concerns that are coming from a lot of different directions. OK, what are those concerns? And then you start to get at the objectives.

Third question, what are the critical concerns? Fourth question, what's wrong with the current situation? Why isn't status quo OK? That's a way to get people thinking, get the juices flowing to think about what are the objectives that are going on.

So initially, the question is just what are the concerns that are on the table? And starting to get people to think about and articulate what those are. And often what I'll do is just have a whiteboard or an easel with a scratch pad on it, and just start listing these things in a kind of brainstorming session.

Other kinds of questions you can ask. What's on your wish list? What would be the best possible outcome for you, the decision maker? What would be the best possible outcome for others that might care about this? So sometimes getting people to imagine what the best case would be, and then start asking them why. And then you start to get a sense of what are the issues that are on the table that they affirmatively want to achieve.

You can also do this the other way. What's the worst thing that could happen? What could really go wrong here? And when you ask the question that way, you're getting people to think about things from the flip side about objectives that they have, things they really want to avoid. That's a useful way.

And sometimes those two ways of asking the question-- what's the best thing that can occur, what's the worst thing that can occur-- are going to give you very different sides to the coin. You're going to see really different objectives coming out in terms of what people want to achieve and what they want to avoid, and that's valuable. These are really just tricks here for brainstorming. What are all the different ways you can ask the question? The question is, what do you care about? What are all the different ways you can ask this?

If you do make a decision, what do you want to avoid? That's another way to ask it. If you don't make a decision, what will happen? That's an interesting thing to think about. If we just postpone our decision, or just don't do anything, just maintain the status quo, what could happen? And is that good or bad? That'll raise some concerns. That's another way to brainstorm what some of the concerns are.

What are you ultimately trying to cheat achieve? That's what we're trying to ask them. Anyway, the point is, there's a lot of different ways to ask this question.

Another way to do this is to say-- and I'll caution this a little bit. You got to be careful how you do this. Because we've said what we're doing is values-focused thinking. We want people to think about the objectives first and the alternatives later, but sometimes people are really anchored on alternatives. They really think they've already solved the problem, and it's really hard for them not to tell you that.

That's OK. Use that in a good way. If people are really anchored on an answer, ask them to talk about that answer, and then ask them why. Probe that answer to find out what they really care about.

So, what are the possible solutions, and why? How If that's your solution, how would you explain that to somebody else? What is good about that solution, and how did you come to that? So I think a lot of times what happens in asking that kind of question is you're really focusing people to identify what their objectives are.

I'll give you a little example about this. We were doing a workshop with the Bureau Of Reclamation, and it concerned the Glen Canyon Dam and concerns about endangered species, the humpback chub in the Colorado River below the Glen Canyon Dam in Arizona. And it was a complex sort of thing. It was Bureau Of Reclamation's decision, but there were about eight federal agencies, and there were five tribes, and there was a state agency, and there were NGOs. There was a lot of people involved and had some things to care about.

And one of the people that was there that was from the Department Of Energy had thought really, really carefully about this problem for a number of years, and felt strongly that he had a solution. And he had articulated this solution in writing before to this group, before we were doing this workshop, and he really, really wanted to talk about that solution. And I was trying very hard to lead the group away from talking about alternatives and lead them to focus on objectives. But this guy really wanted to talk about

this alternative. And so, I said OK, please explain this to me, and then let's probe it and understand why it is that that particular solution works for you.

And what we gained out of that discussion was an understanding of-- he's from Department Of Energy, and was concerned about the energy that's provided by the dam. That was an important objective. He was also concerned about the humpback chub, but he really wanted to address the concerns that the tribal nations had brought that concerned the sanctity of life and the sanctity of the canyon. And he had some assumptions about how the system worked that were embedded in the solution.

And so, we could pick this apart and really see what the objectives were. And at that point, we weren't trying to get to that solution as a solution. What we were trying to do is mine it for an understanding of the objectives, and that worked pretty well.

You can also ask, what would be a terrible solution, and why? Because often, people say this. They'll say, well, whatever we do, we better not do this following action. And you can ask, OK, fine. Why not? What are the objectives that are embedded in that? So what you're trying to do is really unearth those things.

And again, we're at the brainstorming stage. We're not trying to make judgments about any of these things. What we really want to do is just get a long list, perhaps a catalog, of all the things that people care about that we need to think through, and understand how they work.

One of the things we want to do is we want to look at concerns that are distinct and independent. There's a lot of different ways to characterize your concerns about endangered species. And that's fine, that's important. What are the concerns that operate in a very different way to that? In the case of the Colorado River, energy generation, or provision of water for downstream uses, or the cultural preservation of native traditions. These are very distinct kinds of objectives, and it's important that we're looking for those distinct kind of classes of objectives, as well.

So that's the brainstorming stage. And typically, what I do is do that kind of conversation-- and the rules I give to people, I say, look, nobody gets to take something off the list. You can only add. And I don't really want to hear any commentary from you on somebody else's objective. If they stated that, then that's something that needs to be on the table, at least for the moment. Because we're trying to, at the creative stage, really generate as much insight as possible. We'll come back to evaluation later.

So that's step one, articulating the concerns.

Step two is converting those concerns into objectives. Objectives can be stated as a verb with an object. So for instance, the concern might be, it's hard to catch blue gills anymore. That's not clear what the objective is, right? It's a concern at this point, or it's a statement of an issue, something you care about. The potential objective might be to restore panfish populations, perhaps. Or somebody might write a different objective that corresponds to that concern, but I'm just saying, it's restore panfish populations.

We've got a verb, "restore." We've got an object, "panfish populations". And then often, we might actually have a performance criteria, "restore panfish populations to levels that were seen in the early 1970s." So often, an objective will have with it even more detail. But at least it's got a verb and an object.

"Many loons die ingesting lead tackle." It's a statement of the concern, statement of an issue. What's the objective, the management objective? Well, it might be to eliminate lead in tackle. That's a verb with an object. But it also might be something to do with maintain the viability of loon populations over the long term horizon or something like that. So we're converting these concerns into objectives which have a verb and an object.

Another example, "ballast water brings invasive species." Well, "prohibit ballast dumping." Or perhaps, "minimize the introduction of invasive species." These might be objectives that are really the underlying things we want to achieve that are tied to these concerns. So that's really what we're doing here in this step two, is converting the concerns into objectives that give us a clearer sense about what is the value that we're trying to achieve with this objective.

"Certain stakeholders feel excluded." That might be a statement of a concern that you've got in a particular problem. What's the objective there? The objective might be to increase communication, or it might be to involve stakeholders in the decision making. You'd have to think about what the objective is you're trying to achieve there, whether it's a participatory thing or just a communication objective. But anyway, the concern needs to be translated into something that's got a verb and an object.

Finally, "I won't have enough money for this." Well, there's one that you can almost always list as a concern, and the potential objectives there is minimize cost or something like that. That's a very typical objective that we find.

One thing I might note, and this kind of relates to the comment I made a few minutes ago about objectives from a number of different classes. The examples already that we're seeing, some of these are objectives about the resources themselves, the populations and the habitat. Some of it's about resource use-- hunting, or fishing, or something like that. Some of it's about our cost. Some of it's about involvement of the public.

So these are all different kind of classes of objectives. And I think it's useful, often, to be asking yourself what are the resources of concern? Have I got an objective about the resources? What are the uses-- the recreational use or the other kind of uses-- that humans have of these resources? Have I got those objectives captured?

What are the costs? Have I got all those objectives captured? Are their spiritual or traditional or cultural values that are important? Have I captured those? Anyway, so there's some classes of objectives. And that's another way that you can do some of this brainstorming, is to think through those different kinds of objectives, and have I really asked all the kinds of questions that might be important to people? So we've converted concerns into objectives.

Here's an example that I'd like you to consider. And maybe after I've explained this, you can turn off the video, pause the video for a few minutes, and take some time to either jot this down yourself or in a small group.

So, imagine you're the manager of a refuge, and you're developing a management plan for an endangered lizard. Let's say the species benefits from prescribed fire, although your budget for such activities is pretty limited. The species is susceptible to road mortality, and the refuge receives substantial visitation by bird watchers, some of whom like to travel by car.

What I'd like you to do is with that brief description-- and it's written up a little bit more in your notebook on page C3-- I want you to think about what are your concerns? Imagine yourself in this situation. What are the concerns?

And translate those concerns into objectives. What are you hoping to accomplish? What are the stakeholder's wants? What do you or they want to avoid? Think of some of those kind of brainstorming questions that I talked about earlier. Apply them to this setting. OK, we haven't given you a lot of information, but use your imagination. Come up with some concerns, and translate those into

objectives.

Once you've done that, you can restart the video, and we'll have a short discussion about that.

OK, welcome back. Hopefully you've had a chance to talk about this endangered lizard problem on your refuge. What did you come up with?

Well, when I look at this description, I see a number of things. So, a species benefits room prescribed fire. That's giving us a sense of what kind of action we might have to take, although we said the budget for such activities is limited.

One of my concerns is my budget is limited, so I might translate that into an objective like minimize cost. And I'd have to think about what the cost was, but probably the cost has to do with management activities. So minimize cost due to management activities like prescribed fire.

The species is susceptible road mortality. Well, OK, let's think a second. We've got an endangered lizard. Management plan for an endangered lizard-- presumably, really fundamentally to this issue is we want to keep this lizard around. So, I guess the concern is the species is susceptible to road mortality, but really what's the objective that's underlying that?

I think probably the objective is maximize the probability of persistence of this lizard on the refuge, right? So I've got a verb, "maximize." An object, "persistence of this lizard." And that might be the core conservation objective that's implicit here.

What else have I got? Well, the refuge receives substantial visitation by bird watchers, some of whom like to travel by car. So we've got a recreational use of the refuge that's presumably important, So we're concerned about bird watcher's visitation. Maybe that's just as simple as saying "maximize opportunities for bird watching by car or foot on the refuge." And in particular, by car, I guess, if some of the bird watchers really prefer to bird watching in that way.

So that objective-- right, I said "maximize opportunities for bird watching by car." So those are a few of the objectives, then. We had a cost objective, we had a conservation objective, we had a recreational use objective that all came out of this sort of brief description.

Now, you might have done more. You might have asked some of the questions I'd asked before, like what might be the best solution? And then generate some objectives from that. You might have thought

of some other stakeholders that are involved here. That's all fine. Just to give a sense of how you can, even with a short description of a problem, identify some of the concerns and translate that into objectives.

In the kind of work that I do-- and a lot of us do, I think-- in federal, state, and tribal agencies, we often see our natural resource management problems as pretty big partnerships. So we often have a number of people that are going to comment on what's important. And so, I often find myself in groups, helping them elicit objectives or develop lists of objectives.

And so, at the brainstorming stage here that we're talking about, what are other tips? Well, I guess I just keep asking questions until I'm not getting any more information, and I try to ask questions from every different angle that I can to try to get people to think about it from as many different perspectives. Pushing them to think creatively about, really, what's important here. But then, try to be succinct and concise in stating what those objectives, really hone in on what the essence of those objectives are. Repeating this, revising it, rephrasing it until it makes sense.

One really good tip is to guard against the dynamics that happen in groups. You'll know this. I mean, you're sitting in a group, and there's somebody who happens to talk a lot. Look, if I'm in your group, I talk a lot, and it's going to be hard to get me to be quiet.

And so, if somebody's facilitating me, or somebody like me, then a great tip is to have everybody write down their first answers individually first, in quiet. Have a period at the beginning of the brainstorming where everybody's given 10 or 15 minutes to write down a list of their concerns, or their objectives, or what they think the objectives are. Give people time to think about things quietly by themselves, because that allows the people that aren't so verbal in a group to commit to some thoughts.

And they might have some really excellent things that later on they might be intimidated to have stated. But the fact that they wrote it down, I think, gives them the courage, and actually captures some of those ideas, and doesn't get them lost in the group dynamics. So that's a really great idea, is to have individuals write their answers first before you start in with a big group discussion.

I mentioned before the example of somebody really being anchored on a favored alternative. And rather than let that derail things, to just focus on alternatives, use it as a way to mine objectives. What are the underlying objectives that that person is trying to achieve through that favored alternative?

That's a tip for brainstorming. And likewise, if someone's terrified of a particular alternative, ask why. That can often reveal something about the underlying objectives.

It's interesting to note, there's a bunch of literature in the decision analysis world that objectives are constructed, not unearthed. Robin Gregory says that, "this is an exercise in architecture, not archaeology." So the idea is not that the objectives are fully formed, and they exist someplace, and all we've got to do is dig them up and brush them off, but they're under the earth fully-formed in exactly the way they need to be, and we just need to find them. But rather, it's about architecture. It is that we are building these objectives through the conversations we had, through the decision analysis that we do, from the learning about the problem.

And I think this is a pretty important insight, that is, the exercise of structured decision making actually helps people understand, and perhaps even construct, what's important to them. They may not have ever realized what was important to them and what they were hoping to achieve in this particular decision until they're really pressed to articulate it. And I think that's an important insight, and a powerful one, that leads us into creative consideration of objectives. And it means that we often have to go around the track, do this iterative prototyping a number of times, before we've really, fully articulated the set of objectives that are important.

A couple more comments about generating objectives in the brainstorming stage, and that has to do with objectives that occur in the public sector. I work for the Department Of Interior. All the folks, in fact, that were involved in production and design of this course work for Department Of Interior. And many of you, I assume, work for federal, or state, or tribal agencies where you're setting objectives in the public sector. And are there insights about objectives in that setting that are important?

Well, I think there's some things we need to take into consideration. As public servants, we inherit a lot of objectives from the public. So, we've got sources of concerns and objectives that come from the public.

Now, some of that's from the structure of government itself. The statutes that we need to uphold, that come to us from Congress, are expressions of public values that are important enough to be codified in law. That's really important. We need to understand that many of our objectives come from the laws that we are upholding.

There's objectives that come from the current administration, from the executive branch, and the regulations and the policies are developed by the executive branch. And so, we need to look at regulations and policies.

There's objectives that come from the judicial system that are interpreted by the courts for us, and it's important that we understand those as sources of objectives, sources of values, sources of things that we need to achieve through this decision. That's OK, and I think we often can go to these kind of sources to look for objectives and concerns.

We often have general and specific constituencies, as well, that we need to listen to. Some of the management issues that we have, the public is very vocal about what their concerns are. If you think about any decisions surrounding wolves, for instance, or manatees, or whooping cranes, or spotted owls, some of these very visible endangered species-- if you think about concerns about hunting regulations, duck hunting regulations, or deer hunting regulations-- the public is going to be very vocal about their concerns. So those constituencies, those public values, are often expressed to us in a way that we can hear.

There may be local stakeholders. There may be NGOs that are involved. There may be other interested parties. And so, we need to be aware of where are the concerns, where the objectives, from the public in various kinds of different ways, either directly from the public or through interest groups that may be articulating public concerns. Or indeed, through laws or regulation or judicial decisions.

There are government mandates that provide broad outlines and directives. Those mandates are molded by legal and social constraints. They're developed from resource management laws, from regulations, from guidance and policy, from legal precedent. And all of that needs to be considered when we're developing the objectives for a particular decision problem.